

Remarks

Claims 1-9 have been rejected under 35 U.S.C. § 112, first paragraph for containing subject matter which was not described in the specification in such a way so as to reasonably convey to one skilled in the relevant art that the inventors had possession of the claimed invention at the time of filing. Applicants have amended Claim 1 to add “average” in accordance with the Examiner’s helpful suggestion. Withdrawal of the § 112 rejection is respectfully requested.

Claims 1-9, 14 and 15 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Lim et al. or Suominen. Applicants respectfully submit that in view of the amendment to Claim 1, and in further view of the remarks set forth below, the rejection is now obviated. The Applicants invite the Examiner’s attention to column 2, lines 63 through column 3, lines 1-15 Lim et al. wherein they propose that the cereal grain is treated with an organic solvent. Lim et al. treated the cereal grains with solvents such as methanol and ethanol to extract major portions of lipids and other thermally unstable substances from the cereal grain. This teaching is directly opposed to the Applicants’ claims. The Examiner’s attention is invited to page 4 of the Applicants’ specification, which states “these cereal grain flour are not subjected to any treatment, such as, e.g., gelatinization or destructuring or surface modification of the starches, as proposed in the processes of the prior art.”

Claim 1 now recites that the cereal grain flour is not subject to treatment. The Examiner’s attention is further invited to Example 1, page 12 of the Applicants’ specification, wherein it is clearly demonstrated that the cereal grain flour is dried and then combined with a supportable polymer, then cooked and cooled. Nowhere in the Applicants’ specification is there contemplation of treating the cereal grain flour with methanol, ethanol or the like as in Lim et al.. In sharp contrast,

Lim et al. teach that the purpose of treating the cereal grain with a methanol or ethanol is to remove major portions including lipids from the cereal grain flour so that the remaining product is mainly comprised of starch. In light of Lim et al., the Examiner is kindly ask to consider the following passage from page 7, lines 1-7 of the Applicants' specification:

The biodegradable material of the invention is remarkable in that it comprises the totality of the constituents of a cereal grain flour and not just the starch. This makes it possible not only to eliminate all of the starch extraction techniques but also to use the properties of certain constituents of the cereal grain flour, such as lubrication by the fatty acids, improvement of the mechanical performance and flexibility due to the cellulose fibers, the natural coloration and aroma due to the partial destruction of the proteins when the material is prepared.

Again, in sharp contrast Lim et al. state in column 3, lines 60 to column 4, line 8:

Cereal lipids are often concentrated in cereal germs, and degerminated cereal grain generally contain less than about 5% lipids in the endosperm. Native cereal grains contain lipids that may undergo undesirable reactions, such as oxidation, during thermal processing of a composition that includes the cereal grain. Such thermal reactions may alter the composition to the extent that the strength, durability, and/or water-resistance of an article that is formed from the composition is diminished. To avoid such undesirable changes in the composition, the cereal grain, preferably degerminated, is mixed with an organic solvent for a time effective to extract the lipids such as free fatty acids, glycolipids, phospholipids, nonpolar lipids, and the like, and other thermally unstable materials, from the cereal grain.

The above passages illustrate, that the two teachings are directly opposed to one another, and as a result, provide different structure and function to the biodegradable materials. As such, Applicants respectfully submit that the Lim et al. not only fails to teach the Applicants process, but teaches away from the Applicants' process. Lastly, nowhere in Lim et al. is there a suggestion of

having an average granulometry of the cereal grain flour being between about 10 and 2000 μm .

Turning now to the rejection of the claims in view of Suominen, the Applicants respectfully submit that as a result of the current amendments, and in further view of the remarks set forth above and below, the rejection is now obviated. Applicants respectfully submit that Suominen teach a biologically degradable polymer, based on starch molecules. The degradable polymer is divided into small particles by means of enzymes produced by microbes in the form of spores, wherein the enzymes split and release small molecules from the surface of the biopolymer particles.

Nowhere does Suominen suggest the use of untreated cereal grains for the production of a biodegradable polymer. Applicants respectfully submit that Suominen teaches away from the use of average granulometry of cereal grain flour between 10 and 2000 μm . Specifically, the Examiner's attention is invited to column 5, lines 38-44 wherein Suominen points out that an object of the Suominen invention is the production of thin biopolymers which are readily capable of rapid biological degradation. Suominen states:

It is yet another object of the present invention to avoid the disadvantages of earlier materials that consist of biopolymers and synthetic polymers which formed a thick and brittle film which was too expensive for actual preparation and which either did not result in complete biological degradation or in which the biological degradation was too slow.

With the above and other objects in view, the present invention mainly comprises:

- (a) mixing a biologically degradable polymer (biopolymer) with enzyme-producing microbes in the form of spores, and possibly additionally enzymes themselves,
- (b) finely dividing said biologically degradable polymer into small particles in an aqueous suspension by means of said enzymes which split the polymer to small macromolecules and release small molecule compounds from the surface of the biopolymer particles.

Column 6, lines 30-40 of Suominen contains particularly pertinent disclosure, which clearly teaches away from the claimed particle size. Specifically, Suominen states that the preferred particle size should be 5.5 μm . This is far lower than that claimed and there are no teachings or suggestions to one of ordinary skill in the art to increase the size or that there would be any advantage to increase the size.

For the foregoing reasons, Applicants respectfully submit that the claimed invention is patentably distinct from both Lim et al. and Suominen. Withdrawal of the rejections based on these references is respectfully requested.

Applicants respectfully submit that all the pending claims are now in condition for allowance. Early consideration and allowance of all pending claims is therefore respectfully requested.

Respectfully submitted,



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